In the third of Veterinary Record's series of articles promoting One Health, Daniel Mills and Sophie Hall discuss the therapeutic effects of companion animals, the influence of pets on childhood development and how researchers are elucidating the true value of animal companionship.

IT HAS been proposed that the One Health initiative should be extended to 'One Welfare', in recognition of the diverse links between the welfare of human beings and other animals (Anon 2012). This is particularly true for companion animals, with a growing body of evidence indicating the diverse stress-ameliorating effects of the relationships between people and pets; however, their importance to mental and physical health from a developmental perspective (particularly for people) is perhaps not given the attention it deserves. This is potentially a serious oversight for healthcare professionals, policymakers and government, at a time when there are concerns over the growing cost of public healthcare in the industrialised world. Indeed, in the current economic climate, there is perhaps a greater need than ever to consider novel approaches to preventive healthcare, such as the value of animal companionship, since such approaches are potentially more cost-effective and socially acceptable than technological solutions. Companion animals should not be considered a luxury or unnecessary indulgence, but rather, when cared for appropriately, they should be seen as valuable contributors to human health and wellbeing and, as a result, society and the broader economy.

Fig. 1.

A National Guard veteran puts an arm over a horse during equine-assisted therapy at Rocky Top Therapy Center, in Keller, Texas. The centre recently received a grant for its new Horses for Heroes programme to work with veterans and their families to treat post-traumatic stress disorder and other psychological injuries and adjustment issuesPhotograph: Lara Solt/AP/Press Association Images

Emotional responses and development

The term animal-assisted activities (AAA) refers to the broad range of contexts in which animals are used to support people – from structured therapeutic interventions with clearly defined objectives, such as animal-assisted therapies (AAT), to less structured activities, like animal-assisted interventions (AAIs). The latter includes the facilitative effects of animals in the treatment of mental health patients and hospitalised children, brought about by the reduction in anxiety associated with the animal's presence (Lang and others 2010, Muñoz and others 2011).

As well as improving individual quality of life, such effects have wider-reaching economic implications (Headey 1999, Headey and others 2002). Reducing patient anxiety during medical appointments can also facilitate clinical judgement by allowing the clinician to gain a more accurate understanding of the normal state of the patient, as opposed to the patient's state in a stressful situation. Additionally, clinician-patient time may be used more effectively when the patient is less anxious. However, despite these potential benefits in clinical practice, there are few controlled investigations into the effects of human-animal companionship in medical settings.

Along with reducing overt emotional responses such as anxiety, there is evidence to suggest that animal companionship can be highly influential in reducing a sense of isolation. This might suggest that animals are a particularly useful vehicle for providing social support.

The significance of social support as a protector against both mental and physical ill-health is well acknowledged (Berkman and others 2000). Such effects are thought to be a consequence both of effects on processes that influence susceptibility to physical and mental health issues (for example, feelings of stability and self-worth improve adherence to good health practices) and ‘buffering’ effects (for example, by intervening between the negative event and the physiological reaction) (Cohen and Wills 1985). The routine of animal care can provide daily stability and feelings of worth (direct effects) as well as providing a distraction from negative events (indirect effects). Indeed, cats have been found to improve negative moods as effectively as a human partner (Turner and others 2003) and cat ownership has been shown to ameliorate depressive moods of single adults (Rieger and Turner 1999). Additionally, the constant companionship of an animal has been shown to reduce feelings of loneliness in elderly care home residents (Banks and others 2008), suggesting that animal companionship can ameliorate loneliness even in a group environment. Furthermore, a study with patients in palliative care showed that the presence of a dog, cat or rabbit improved the mood of patients (Kumasaka and others 2012). Similar mood changes have also been observed in children with autism (Silva and others 2011) and Alzheimer's patients (Mossello and others 2011). ‘In the field of human health and medical psychology there is evidence to suggest that dog and cat owners have better psychological and physical health than non-owners’

The supportive effects of animal companionship have also been observed in clinical and forensic developmental psychology, with survivors of childhood sexual abuse rating their animals as being more supportive than people (Barker and others 1997).

Future investigations are required to investigate specifically how AAI improves these outcome measures. Is it by the direct effects of increasing self-worth and interest in life, or a byproduct of the neurochemistry of social bonding, which antagonises the effects of depression (Panksepp and Biven 2012) and promotes a healthy immune system (Charnetsky and others 2004), or is it by therapeutic mechanisms, which reduce the negative physiological effects of stress and anxiety, or perhaps a combination of both?

In the field of human health and medical psychology there is evidence to suggest that dog and cat owners have better psychological and physical health than non-owners (Headey 1999). Dog owners are reported to recover more quickly after serious mental (Wisdom and others 2009) and physical (Friedmann and Thomas 1998) illness. Moreover, they make fewer visits to their doctors (Headey and Grabka 2007).

Animal companionship also has positive effects on child development. With modern society being more dynamic than ever and children changing locations, schools and family units more frequently (Walsh 2003), it is increasingly important to consider the protective role that companion animals can play in reducing the negative effects associated with these instabilities. For instance, companion animals can provide

consistency and support throughout such transitions, which may diminish the negative impacts that these events have. In particular, during transitional phases, it can be difficult for a child to develop strong bonds and empathy with people. Because animals appear relatively straightforward in their emotional displays, children find it easier to understand them, which strengthens the bond and leads to heightened confidence and more positive moods; importantly, these positive effects can transcend their relationships with people (Melson 2003, Serpell 2008).

Although it could be argued that the daily care required by animals could mitigate against the practical value of AAI in children, the evidence suggests that these responsibilities may themselves have a direct positive influence on child development (Haggerty and others 1989) in terms of task accomplishment, responsibility and regular positive reinforcement (for example, a dog wagging its tail). All of these help to build a child's self-esteem, which is essential for social competence and academic achievement. It has also been suggested that children who are pet owners have better social encounters (MacDonald 1981) and are more popular with their peers (Corson and O'Leary Corson 1987).

FIG 2.

A goat takes a rest on the lap of a resident at a senior citizens living community in the USA. The therapy animal is brought in to aid and entertain the residentsPhotograph: Kristin Streff/AP/Press Association Images

Underlying mechanisms

Despite the importance of animal companionship in reducing negative human emotions and increasing positive emotions, we still do not have a good understanding of the processes underlying these effects. It has been hypothesised that the human-animal bond is instrumental in shaping a child's emotional development. But more broadly, attachment is an emotional bond that supports a sense of closeness, wellbeing and security (Bowlby 1974). Typically, people become highly attached to their pets, and more than 85 per cent of owners view their pet as a member of their family (Cohen 2002). Vidovic and others (1999) reported that children with greater attachment to their pets showed greater empathy and prosocial behaviours and had a healthier family environment. However, other studies show that levels of ‘During transitional phases, it can be difficult for a child to develop strong bonds and empathy with people. Because animals appear relatively straightforward in their emotional displays, children find it easier to understand them, which strengthens the bond and leads to heightened confidence and more positive moods’

attachment do not explain decreased feelings of loneliness or increased feelings of support (Barker and others 1997).

An alternative, or perhaps concurrent, explanation relates to the value of animals in acting as facilitators of social interaction between people (McNicholas and Collis 2000, Kruger and Serpell 2006). Companion animals are thought to act as ‘social lubricants’ (Gunter 1999) by encouraging others to approach and engage in social conversation (McNicholas and Collis 2000). During development, this type of experience may be particularly important in shaping future coping

mechanisms of the individual, with the non-evaluative nature of the companion animal relationship possibly being important in providing feelings of support (Norris and others 1999).

Both of the theories discussed so far focus on the nature of the relationship that arises from certain types of interaction with the companion animal, but an alternative hypothesis considers the importance of companion animals in fulfilling a basic biological need of people. This is commonly referred to as the biophilia hypothesis, and is predicated on the assumption that people have adapted to attend to and have empathy with human and non-human life in their environment (Kellert 1997). It is argued that human beings are innately driven to attend to animals in their environment, as a result of the prey and predator relationships involved in historical human-animal interactions (Wilson 1984). It has been suggested that, as a result of this, the presence of a companion animal increases human attention to its positive influences (for example, their relationship with the animal), which buffers negative emotional effects. The biophilia hypothesis has received favour in some child development literature as an explanation for the positive effects of animals in childhood development (Kahn and Kellert 2002), but strong specific evidence is still lacking. The increased attention inherent in animal companionship might explain why children with attention deficits can demonstrate improved behaviours in the presence of animals (Katcher and Teumer 2006).

Cognitive development

The role of animals in empathy development is of increasing interest in the management of a range of developmental disorders, such as autism (O'Haire 2013); autism has been estimated to have cost the UK economy £28 billion in 2007 and to have a lifetime cost per individual of between £3.1 and £4.6 million (Knapp and others 2007). However, the value of companion animals in this context, as elsewhere, appears to extend beyond their influence on the emotional development of individuals, with the animals often also having a broader effect on human cognitive development.

Autism is a profound developmental disorder characterised by severe impairments in social behaviour and communication and restricted interests and behaviours (American Psychiatric Association 1994). People with autism are often characterised by a lack of empathy towards others (Auyeung and others 2009) and show over- and under-responsiveness to sensory stimuli, as well as a lack of skilled motor functioning (Rogers 1998). The number of children diagnosed with autism appears to be steadily increasing (Merrick and others 2004). Interventions aimed at helping people with autism are highly variable in their efficacy and scientific grounding, reflecting both the

individual nature of the condition and our lack of understanding of it (National Institute for Health and Clinical Excellence 2013).

Many therapies utilise elements of the sensory integration framework (Ayres 1972), which highlights how difficulties in sensory perception and integration impair the ability to attend to and appropriately respond to complex behaviour. Petting an animal increases fine motor control skills (Chandler 2005), and therefore it may be that by encouraging children to gently pet and communicate with an animal we can promote the integration of sensory and motor information in a relaxed setting. This may be valuable to the development of all children, but of particular therapeutic value to those with autism.

Additionally, in the light of research suggesting a positive relationship between animal companionship and empathy in children (Poresky 1996, Vidovic and others 1999), it has been proposed that AAI may promote the development of empathy in children with autism, including behaviours such as ‘offering to share’ and ‘offering comfort’ (Grandgeorge and others 2012).

A recent review highlighted how AAI might improve a range of areas of functioning in individuals with autism, including language skills and social interaction, as well as decrease stress levels and problematic behaviours (O'Haire 2013), although such conclusions are based largely on poor quality investigations. However, a controlled longitudinal study at the University of Lincoln, in conjunction with the Parents Autism Workshops and Support network, examining the effects of pet dog ownership on UK families with an autistic child, has recently been completed and is due to report soon (Wright and others, unpublished observations). Uniquely, this has examined the effects on the child, primary carer and wider family, since it is hypothesised that all of these might benefit from the companionship provided by a dog. Dogs provide a uniquely adaptable form of intervention for complex problems affecting the quality of life of families in this predicament and perhaps one of the real values of companion animals is their flexibility and sensitivity to diverse needs in different individuals or the same individual at different times.

FIG 3.

It has been suggested that, by being non-judgmental, reading dogs can help with children's self-esteem when reading out loud Photograph: S. Hall

Facilitating learning

There is a growing need for the value of animal companionship to be recognised in a wider educational setting. The words ‘dog’ and ‘cat’ are among the most frequent words in early infant vocabulary (DeLoache and others 2011), suggesting that young children are highly motivated to learn and use words associated with animals. Children who are pet owners have higher autonomy, self-concept and self-esteem (Van Houtte and Jarvis 1995). The presence of a dog has been shown to build motivation, focus and task perseverance (Heimlich 2001, Barker and Wolen 2008). These are important characteristics for determining successful learning in the classroom environment and such observations have encouraged psychologists to analyse the potential role of animal companions as learning facilitators. Dolphins are frequently used in an effort to promote interest in and motivation for learning activities and the concentration span of people with severe learning disabilities (Nathanson and others 1997). However, sound scientific evidence to support these effects is still lacking (Marino and Lilienfeld 2007). In contrast, the presence of a dog has been shown to reduce anxiety and blood pressure in children when reading aloud (Barker and Wolen 2008), suggesting that dogs make reading a more enjoyable process by reducing psychological discomfort. Indeed, research indicates that children have more positive attitudes towards school and learning when a classroom dog is present (Beetz 2013). This may reflect the fact that children view a classroom dog as a non-judgemental participant in their education (Friesen 2010).

The importance of dogs in reading development is central to the Reading Education Assistance Dogs (READ) programme. There are currently over 3000 volunteers across the USA and Europe who are trained, with their dog, to support children's reading in school. In a typical session, children read to the handler and the dog for approximately 20 minutes. Many beneficial effects have been anecdotally observed with this programme, including more confident readers who show increased enthusiasm for reading; however, to date, only small-scale studies have been conducted exploring the effects of such intervention programmes. In order to provide substantive evidence for the beneficial effects of reading to dogs in the classroom, further controlled studies need to be conducted. Given that poor literacy skills cost the UK around £2.5 billion a year (Gross 2009), the potential of animal companionship to promote reading processes is clearly deserving of further research. The READ scheme also shows how the beneficial effects of positive emotional development (discussed previously) associated with animal companionship can transcend into domains of cognitive development.

FIG 4.

An elementary school student interacts with a dog trained by Human Animal Bond in Colorado (HABIC). The programme uses the human-animal bond to assist in therapy and activities at schools, nursing homes, rehabilitation facilities and detention centres. The group has 150 active human-animal partnerships using 149 dogs and one catPhotograph: V. Richard Haro/ AP/Press Association Images

Opportunities

It is clear that animal companionship has significant beneficial implications for the development of human emotional and cognitive development, and these should not be underestimated or obscured by inflating the risks posed by companion animals, which, while real, often seem to attract greater media attention. The positive effects of animals in reducing negative emotions and increasing positive emotions may improve not only quality of life but can also help with the development of effective interventions. The potential of AAA to enable clinical interventions with a broad range of patients (for example, people with autism, Alzheimer's and victims of abuse) is exciting and deserves scientific evaluation, so we can find out what is best for society. Furthermore, by improving emotional development, animal ‘Given that poor literacy skills cost the UK around £2.5 billion a year, the potential of animal companionship to promote reading processes is clearly deserving of further research’

companionship has considerable potential for facilitating learning, especially by children in the classroom. Although positive effects of animal companionship and AAA are well-documented, such reports often lack vigorous scientific support; however, we should not confuse a lack of evidence with evidence of absence. Rather we should be curious about all the ways companion animals can potentially help us and embrace the opportunities provided by a greater appreciation of the impact of companion animals on our lives.

It is perhaps ironic that in a world that seems to be increasingly encouraging the development of technologies to make our lives easier, an obvious answer to many of our problems may be literally staring us in the face (or sitting on our lap).

Developing One Health

Veterinary Record is publishing a series of articles in 2014 on the theme of One Health. The aim is to foster a wider appreciation of the potential benefits of One Health and encourage its application. Previous articles in the series have included:

The evolution of One Health: a decade of progress and challenges for the future, by Paul Gibbs (VR, January 25, 2014, vol 174, pp 85-91)

One Health and the food chain: maintaining safety in a globalised industry, by Patrick Wall (VR, February 22, 2014, vol 174, pp 189-192)

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